

Claims:

1. A planar surface illuminator for use beneath a liquid crystal display panel comprising:

a light guide plate comprising a bottom surface;

a plurality of point light sources irradiating the light guide plate, darkened areas of the light guide plate being formed adjacent to the point light sources; and

a number of dot-patterns formed on the bottom surface, wherein some dot-patterns positioned at the darkened areas are made of melamine-based fluorescent particles.
2. The planar surface illuminator as described in claim 1, wherein the melamine-based fluorescent particles are polymerized with green fluorescent dye and melamine particles.
3. The planar surface illuminator as described in claim 2, wherein excitation and emission wavelengths of the green fluorescent dye are respectively about 506 and 529 nanometers.
4. The planar surface illuminator as described in claim 1, wherein the melamine-based fluorescent particles are polymerized with red fluorescent dye and melamine particles.
5. The planar surface illuminator as described in claim 4, wherein excitation and emission wavelengths of the red fluorescent dye are respectively about 636 and 686 nanometers.

6. The planar surface illuminator as described in claim 1, wherein the melamine-based fluorescent particles are polymerized with orange fluorescent dye and melamine particles.
7. The planar surface illuminator as described in claim 6, wherein excitation and emission wavelengths of the orange fluorescent dye are respectively about 560 and 584 nanometers.
8. The planar surface illuminator as described in claim 1, wherein each melamine-based fluorescent particle is a mixture of green, red and orange fluorescent dyes polymerized with melamine particles.
9. The planar surface illuminator as described in claim 1, wherein diameters of the melamine-based fluorescent particles are in a range of from 1 to 10 microns.
10. The planar surface illuminator as described in claim 1, wherein the dot-patterns are uniformly spaced on the bottom surface.
11. The planar surface illuminator as described in claim 1, wherein the dot-patterns are uniformly spaced on the bottom surface, and the further the dot-patterns are away from the point sources, the larger the diameter of the dot-patterns are.
12. The planar surface illuminator as described in claim 1, wherein the dot-patterns are injection molded or printed on the bottom surface.
13. The planar surface illuminator as described in claim 1, wherein the point light sources are light emitting diodes.
14. The planar surface illuminator as described in claim 1, wherein the point light sources are positioned at one side of the light guide plate.

15. A planar surface illuminator for use beneath a liquid crystal display panel comprising:

a light guide plate comprising a bottom surface;

a plurality of point light sources irradiating the light guide plate, darkened areas of the light guide plate being formed adjacent to the point light sources; and

a number of dot-patterns formed on the bottom surface, wherein some dot-patterns coated with melamine-based fluorescent particles are positioned at the darkened areas, for providing even brightness to the liquid crystal display.

16. The planar surface illuminator as described in claim 15, wherein the melamine-based fluorescent particles are polymerized with green fluorescent dye and melamine particles.

17. The planar surface illuminator as described in claim 16, wherein excitation and emission wavelengths of the green fluorescent dye are respective about 506 and 529 nanometers.

18. The planar surface illuminator as described in claim 15, wherein the melamine-based fluorescent particles are polymerized with red fluorescent dye and melamine particles.

19. A planar surface illuminator for use beneath a liquid crystal display panel, comprising:

a light guide plate defining a side face, a bottom face and a top face opposite to said bottom face;

a plurality of point light sources located by the side face and spaced from one another along said side face under a condition that each of said point light

sources defines effective light exposure within a specific sector range so as to result in areas with thereof different brightness where the brighter areas are exposed under more effective light exposure while the darker areas are exposed under less effective light exposure; and

a plurality of dot-patterns formed on the bottom face; wherein

only some of said dot-patterns, which are essentially located in the darker areas, are equipped with fluorescent particles whereby uniform emission is obtained on the top face.